



[4910-13-P]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2016-6664; Directorate Identifier 2015-NM-177-AD]

RIN 2120-AA64

Airworthiness Directives; The Boeing Company Airplanes

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: We propose to supersede Airworthiness Directive (AD) 2012-16-07, which applies to certain Boeing Model 737-500 series airplanes. AD 2012-16-07 currently requires inspections of the fuselage skin at the chem-milled steps, and repair if necessary. Since we issued AD 2012-16-07, an evaluation by the design approval holder (DAH) indicates that the fuselage skin is subject to widespread fatigue damage (WFD), and we have received reports of cracks at the chem-milled steps in the fuselage skin. This proposed AD would add new fuselage skin inspections for cracking, inspections to detect missing or loose fasteners and any disbonding or cracking of bonded doublers, permanent repairs of time-limited repairs, related investigative and corrective actions if necessary, and skin panel replacement. We are proposing this AD to detect and correct cracking on the aft lower lobe fuselage skins, which could result in rapid decompression of the airplane.

DATES: We must receive comments on this proposed AD by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: You may send comments, using the procedures found in 14 CFR 11.43 and 11.45, by any of the following methods:

- Federal eRulemaking Portal: Go to <http://www.regulations.gov>. Follow the instructions for submitting comments.
- Fax: 202-493-2251.
- Mail: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE., Washington, DC 20590.
- Hand Delivery: Deliver to Mail address above between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

For service information identified in this NPRM, contact Boeing Commercial Airplanes, Attention: Data & Services Management, P. O. Box 3707, MC 2H-65, Seattle, WA 98124-2207; telephone 206-544-5000, extension 1; fax 206-766-5680; Internet <https://www.myboeingfleet.com>. You may view this referenced service information at the FAA, Transport Airplane Directorate, 1601 Lind Avenue SW., Renton, WA. For information on the availability of this material at the FAA, call 425-227-1221. It is also available on the Internet at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2016-6664.

Examining the AD Docket

You may examine the AD docket on the Internet at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2016-6664; or in person at the Docket Management Facility between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this proposed AD, the regulatory evaluation, any comments received, and other information. The street address for the Docket Office (phone: 800-647-5527) is in the ADDRESSES section. Comments will be available in the AD docket shortly after receipt.

FOR FURTHER INFORMATION CONTACT: Wade Sullivan, Aerospace Engineer, Airframe Branch, ANM-120S, FAA, Seattle Aircraft Certification Office (ACO), 1601

Lind Avenue SW., Renton, WA 98057-3356; phone: 425-917-6430; fax: 425-917-6590; email: wade.sullivan@faa.gov.

SUPPLEMENTARY INFORMATION:

Comments Invited

We invite you to send any written relevant data, views, or arguments about this proposed AD. Send your comments to an address listed under the ADDRESSES section. Include “Docket No. FAA-2016-6664; Directorate Identifier 2015-NM-177-AD” at the beginning of your comments. We specifically invite comments on the overall regulatory, economic, environmental, and energy aspects of this proposed AD. We will consider all comments received by the closing date and may amend this proposed AD because of those comments.

We will post all comments we receive, without change, to <http://www.regulations.gov>, including any personal information you provide. We will also post a report summarizing each substantive verbal contact we receive about this proposed AD.

Discussion

Fatigue damage can occur locally, in small areas or structural design details, or globally, in widespread areas. Multiple-site damage is widespread damage that occurs in a large structural element such as a single rivet line of a lap splice joining two large skin panels. Widespread damage can also occur in multiple elements such as adjacent frames or stringers. Multiple-site damage and multiple-element damage cracks are typically too small initially to be reliably detected with normal inspection methods. Without intervention, these cracks will grow, and eventually compromise the structural integrity of the airplane. This condition is known as widespread fatigue damage. It is associated with general degradation of large areas of structure with similar structural details and

stress levels. As an airplane ages, WFD will likely occur, and will certainly occur if the airplane is operated long enough without any intervention.

The FAA's WFD final rule (75 FR 69746, November 15, 2010) became effective on January 14, 2011. The WFD rule requires certain actions to prevent structural failure due to WFD throughout the operational life of certain existing transport category airplanes and all of these airplanes that will be certificated in the future. For existing and future airplanes subject to the WFD rule, the rule requires that DAHs establish a limit of validity (LOV) of the engineering data that support the structural maintenance program. Operators affected by the WFD rule may not fly an airplane beyond its LOV, unless an extended LOV is approved.

The WFD rule (75 FR 69746, November 15, 2010) does not require identifying and developing maintenance actions if the DAHs can show that such actions are not necessary to prevent WFD before the airplane reaches the LOV. Many LOVs, however, do depend on accomplishment of future maintenance actions. As stated in the WFD rule, any maintenance actions necessary to reach the LOV will be mandated by airworthiness directives through separate rulemaking actions.

In the context of WFD, this action is necessary to enable DAHs to propose LOVs that allow operators the longest operational lives for their airplanes, and still ensure that WFD will not occur. This approach allows for an implementation strategy that provides flexibility to DAHs in determining the timing of service information development (with FAA approval), while providing operators with certainty regarding the LOV applicable to their airplanes.

On July 31, 2012, we issued AD 2012-16-07, Amendment 39-17154 (77 FR 48423, August 14, 2012) ("AD 2012-16-07"), for certain The Boeing Company Model 737-500 series airplanes. AD 2012-16-07 requires inspections of the fuselage skin at the chem-milled steps, and repair if necessary. AD 2012-16-07 resulted from reports of

chem-milled steps cracking on the aft lower lobe fuselage skins. We issued AD 2012-16-07 to detect and correct cracking on the aft lower lobe fuselage skins, which could result in rapid decompression of the airplane.

Actions Since AD 2012-16-07 Was Issued

Since we issued AD 2012-16-07, an evaluation by the DAH indicates that the lower lobe skin panels are subject to WFD, and we have received reports of cracks at the chem-milled steps in the fuselage skin.

Related Service Information under 1 CFR part 51

We reviewed Boeing Special Attention Service Bulletin 737-53-1315, Revision 1, dated June 30, 2015. The service information describes procedures for inspection and repair of the fuselage skin panels between station 727 and station 1016, and between stringers S-14 and S-25; and also describes procedures for skin panel replacement. This service information is reasonably available because the interested parties have access to it through their normal course of business or by the means identified in the ADDRESSES section.

FAA's Determination

We are proposing this AD because we evaluated all the relevant information and determined the unsafe condition described previously is likely to exist or develop in other products of the same type designs.

Proposed AD Requirements

Although this proposed AD does not explicitly restate the requirements of AD 2012-16-07, this proposed AD would retain all of the requirements of AD 2012-16-07. Those requirements are referenced in the service information identified previously, which, in turn, is referenced in paragraphs (g) and (h) of this proposed AD.

This proposed AD would also require accomplishing the actions specified in the service information described previously, except as discussed under “Differences Between this Proposed AD and the Service Information.”

For information on the procedures and compliance times, see this service information at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2016-6664.

The phrase “related investigative actions” is used in this proposed AD. “Related investigative actions” are follow-on actions that (1) are related to the primary actions, and (2) further investigate the nature of any condition found. Related investigative actions in an AD could include, for example, inspections.

The phrase “corrective actions” is used in this proposed AD. “Corrective actions” are actions that correct or address any condition found. Corrective actions in an AD could include, for example, repairs.

Differences Between this Proposed AD and the Service Information

Boeing Special Attention Service Bulletin 737-53-1315, Revision 1, dated June 30, 2015, specifies to contact the manufacturer for instructions on how to repair certain conditions and also to obtain certain work instructions, but this proposed AD would require repairing those conditions and also to obtain those work instructions in one of the following ways:

- In accordance with a method that we approve; or
- Using data that meet the certification basis of the airplane, and that have been approved by the Boeing Commercial Airplanes Organization Designation Authorization (ODA) whom we have authorized to make those findings.

Explanation of Compliance Time

The compliance time for the replacement specified in this proposed AD for addressing WFD was established to ensure that discrepant structure is replaced before

WFD develops in airplanes. Standard inspection techniques cannot be relied on to detect WFD before it becomes a hazard to flight. We will not grant any extensions of the compliance time to complete any AD-mandated service bulletin related to WFD without extensive new data that would substantiate and clearly warrant such an extension.

Costs of Compliance

We estimate that this proposed AD affects 33 airplanes of U.S. registry.

We estimate the following costs to comply with this proposed AD:

Estimated costs

Action	Labor cost	Parts cost	Cost per product	Cost on U.S. operators
Inspections [actions retained from AD 2012-16-07]	23 work-hours X \$85 per hour = \$1,955 per inspection cycle	\$0	\$1,955 per inspection cycle	\$64,515 per inspection cycle
Inspections [new proposed action]	Up to 1,515 work-hours X \$85 per hour = \$128,775 per inspection cycle	\$0	Up to \$128,775 per inspection cycle	Up to \$4,249,575 per inspection cycle
Skin panel replacement [new proposed action]	688 work-hours X \$85 per hour = \$58,480	\$96,000	\$154,480	\$5,097,840

We estimate the following costs to do any necessary repairs that would be required based on the results of the proposed inspection. We have no way of determining the number of aircraft that might need these repairs:

On-condition costs

Action	Labor cost	Parts cost	Cost per product
Time-limited repair	24 work-hours X \$85 per hour =\$2,040	^[1]	\$2,040 ¹
Permanent repair	31 work-hours X \$85 per hour =\$2,635	^[1]	\$2,635 ¹
Permanent repair inspection	4 work-hours X \$85 per hour =\$340 per inspection cycle	^[1]	\$340 ¹ per inspection cycle

^[1] We have received no definitive data that would enable us to provide parts cost estimates for the on-condition actions specified in this proposed AD.

Authority for this Rulemaking

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, Section 106, describes the authority of the FAA Administrator. Subtitle VII, Aviation Programs, describes in more detail the scope of the Agency's authority.

We are issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701, "General requirements." Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

Regulatory Findings

We have determined that this proposed AD would not have federalism implications under Executive Order 13132. This proposed AD would not have a substantial direct effect on the States, on the relationship between the national

Government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify that the proposed regulation:

- (1) Is not a “significant regulatory action” under Executive Order 12866,
- (2) Is not a “significant rule” under the DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979),
- (3) Will not affect intrastate aviation in Alaska, and
- (4) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

The Proposed Amendment

Accordingly, under the authority delegated to me by the Administrator, the FAA proposes to amend 14 CFR part 39 as follows:

PART 39 - AIRWORTHINESS DIRECTIVES

- 1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

§ 39.13 [Amended]

- 2. The FAA amends § 39.13 by removing Airworthiness Directive (AD) 2012-16-07, Amendment 39-17154 (77 FR 48423, August 14, 2012), and adding the following new AD:

The Boeing Company: Docket No. FAA-2016-6664; Directorate Identifier 2015-NM-177-AD.

(a) Comments Due Date

The FAA must receive comments on this AD action by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

(b) Affected ADs

This AD replaces AD 2012-16-07, Amendment 39-17154 (77 FR 48423, August 14, 2012) (“AD 2012-16-07”).

(c) Applicability

This AD applies to all The Boeing Company Model 737-500 series airplanes, certificated in any category.

(d) Subject

Air Transport Association (ATA) of America Code 53, Fuselage.

(e) Unsafe Condition

This AD was prompted by an evaluation by the design approval holder (DAH) that indicates that the fuselage skin is subject to widespread fatigue damage (WFD), and reports of cracks at the chem-milled steps in the fuselage skin. We are issuing this AD to detect and correct cracking on the aft lower lobe fuselage skins, which could result in rapid decompression of the airplane.

(f) Compliance

Comply with this AD within the compliance times specified, unless already done.

(g) Inspections, Related Investigative and Corrective Actions

At the applicable times specified in table 1 of paragraph 1.E., “Compliance,” of Boeing Special Attention Service Bulletin 737-53-1315, Revision 1, dated June 30, 2015, except as required by paragraphs (h)(1) and (h)(2) of this AD: Do the applicable inspections to detect cracks in the fuselage skin panels; and do all applicable related investigative and corrective actions; in accordance with the Accomplishment Instructions of Boeing Special Attention Service Bulletin 737-53-1315, Revision 1, dated

June 30, 2015, except as required by paragraphs (h)(3), (h)(4), and (h)(5) of this AD. Do all applicable related investigative and corrective actions before further flight. Repeat the applicable inspections thereafter at the applicable intervals specified Boeing Special Attention Service Bulletin 737-53-1315, Revision 1, dated June 30, 2015.

Accomplishment of a repair in accordance with “Part 3: Repair” of the Accomplishment Instructions of Boeing Special Attention Service Bulletin 737-53-1315, Revision 1, dated June 30, 2015, except as required by paragraph (h)(3) of this AD, is terminating action for the repetitive inspections required by this paragraph at the repaired locations only.

(h) Exceptions to Boeing Special Attention Service Bulletin 737-53-1315, Revision 1, dated June 30, 2015

(1) Where Boeing Special Attention Service Bulletin 737-53-1315, Revision 1, dated June 30, 2015, specifies compliance times “after the Revision 1 date of this service bulletin,” this AD requires compliance within the specified compliance times after the effective date of this AD.

(2) The Condition column of table 1 of Paragraph 1.E., “Compliance,” of Boeing Special Attention Service Bulletin 737-53-1315, Revision 1, dated June 30, 2015, refers to airplanes in certain configurations as of the “issue date of Revision 1 of this service bulletin.” However, this AD applies to airplanes in the specified configurations “as of the effective date of this AD.”

(3) Where Boeing Special Attention Service Bulletin 737-53-1315, Revision 1, dated June 30, 2015, specifies contacting Boeing for repair instructions or work instructions, before further flight, repair or perform the work instructions using a method approved in accordance with the procedures specified in paragraph (m) of this AD, except as required by paragraph (h)(4) of this AD.

(4) For airplanes on which an operator has a record that a skin panel was replaced with a production skin panel at or before 53,000 total flight cycles: At the applicable time

for the next inspection as specified in table 1 of paragraph 1.E., “Compliance,” Boeing Special Attention Service Bulletin 737-53-1315, Revision 1, dated June 30, 2015, except as provided by paragraphs (h)(1) and (h)(2) of this AD: Perform inspections and applicable corrective actions using a method approved in accordance with the procedures specified in paragraph (m) of this AD.

(5) The Condition column of table 2 of Paragraph 1.E., “Compliance,” of Boeing Special Attention Service Bulletin 737-53-1315, Revision 1, dated June 30, 2015, refers to airplanes in certain configurations as of the “issue date of Revision 1 of this service bulletin.” However, this AD applies to airplanes in the specified configurations regardless of when the time limited repair is installed.

(i) Actions for Airplanes with a Time Limited Repair Installed

For airplanes with a time limited repair installed as specified in Boeing Special Attention Service Bulletin 737-53-1315, dated July 29, 2011; or Boeing Special Attention Service Bulletin, Revision 1, dated June 30, 2015: At the applicable times specified in table 2 of paragraph 1.E., “Compliance,” of Boeing Special Attention Service Bulletin 737-53-1315, Revision 1, dated June 30, 2015, except as provided by paragraphs (h)(1) and (h)(5) of this AD: Do the actions specified in paragraphs (i)(1) and (i)(2) of this AD.

(1) Do the applicable inspections to detect missing or loose fasteners and any disbonding or cracking of bonded doublers; and do all applicable related investigative and corrective actions; in accordance with the Accomplishment Instructions of Boeing Special Attention Service Bulletin 737-53-1315, Revision 1, dated June 30, 2015, except as required by paragraph (h)(3) of this AD. Do all applicable related investigative and corrective actions before further flight. Repeat the applicable inspections thereafter at the applicable intervals specified Boeing Special Attention Service Bulletin 737-53-1315, Revision 1, dated June 30, 2015.

(2) Make the time limited repair permanent; and do all applicable related investigative and corrective actions; in accordance the Accomplishment Instructions of Boeing Special Attention Service Bulletin 737-53-1315, Revision 1, dated June 30, 2015, except as required by paragraph (h)(3) of this AD. Do all applicable related investigative and corrective actions before further flight. Accomplishing the permanent repair required by this paragraph terminates the inspections required by paragraph (i)(1) of this AD for the permanently repaired area only.

(j) Certain Post-repair Inspections

For airplanes with a permanent repair installed as specified in Boeing Special Attention Services Bulletin 737-53-1315, Revision 1, dated June 30, 2015: At the applicable time specified in table 3 of paragraph 1.E., “Compliance,” of Boeing Special Attention Service Bulletin 737-53-1315, Revision 1, dated June 30, 2015, except as provided by paragraph (h)(1) of this AD: Do an external low frequency eddy current (LFEC) inspection for cracking of the skin at the critical fastener row of the repair doubler; and do all applicable corrective actions; in accordance the Accomplishment Instructions of Boeing Special Attention Service Bulletin 737-53-1315, Revision 1, dated June 30, 2015, except as required by paragraph (h)(3) of this AD. Do all applicable corrective actions before further flight. Repeat the LFEC inspection thereafter at the applicable intervals specified Boeing Special Attention Service Bulletin 737-53-1315, Revision 1, dated June 30, 2015.

(k) Skin Panel Replacement

At the later of the times specified in paragraphs (k)(1) and (k)(2) of this AD: Replace the applicable skin panels, and do all applicable related investigative and corrective actions, in accordance with the Accomplishment Instructions of Boeing Special Attention Service Bulletin 737-53-1315, Revision 1, dated June 30, 2015. Do all applicable related investigative and corrective actions before further flight. Doing the

skin panel replacement required by this paragraph terminates the inspection requirements of paragraph (g) of this AD for that skin panel only, provided the skin panel replacement was done with a production skin panel after 53,000 total flight cycles.

(1) Before 60,000 total flight cycles, but not at or before 53,000 total flight cycles.

(2) Within 6,000 flight cycles after the effective date of this AD, but not at or before 53,000 total flight cycles.

(l) Credit for Previous Actions

This paragraph provides credit for the zone 1 actions required by paragraph (g) of this AD, as described in Boeing Special Attention Service Bulletin 737-53-1315, Revision 1, dated June 30, 2015, if the zone 1, 2, and 3 actions, as described in Boeing Special Attention Service Bulletin 737-53-1315, dated July 29, 2011, were performed before the effective date of this AD using Boeing Special Attention Service Bulletin 737-53-1315, dated July 29, 2011, except as required by paragraph (h)(4) of this AD. Boeing Special Attention Bulletin 737-53-1315, dated July 29, 2011, was incorporated by reference in AD 2012-16-07.

(m) Alternative Methods of Compliance (AMOCs)

(1) The Manager, Seattle Aircraft Certification Office (ACO), FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or local Flight Standards District Office, as appropriate. If sending information directly to the manager of the ACO, send it to the attention of the person identified in paragraph (n)(1) of this AD. Information may be emailed to:

9-ANM-Seattle-ACO-AMOC-Requests@faa.gov.

(2) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the local flight standards district office/certificate holding district office.

(3) An AMOC that provides an acceptable level of safety may be used for any repair, modification, or alteration required by this AD if it is approved by the Boeing Commercial Airplanes Organization Designation Authorization (ODA) that has been authorized by the Manager, Seattle ACO, to make those findings. To be approved, the repair method, modification deviation, or alteration deviation must meet the certification basis of the airplane, and the approval must specifically refer to this AD.

(4) AMOCs approved previously for AD 2012-16-07 are approved as AMOCs for the corresponding provisions of paragraph (g) of this AD.

(n) Related Information

(1) For more information about this AD, contact Wade Sullivan, Aerospace Engineer, Airframe Branch, ANM-120S, FAA, Seattle Aircraft Certification Office (ACO), 1601 Lind Avenue SW., Renton, WA 98057-3356; phone: 425-917-6430; fax: 425-917-6590; email: wade.sullivan@faa.gov.

(2) For service information identified in this AD, contact Boeing Commercial Airplanes, Attention: Data & Services Management, P. O. Box 3707, MC 2H-65, Seattle, WA 98124-2207; telephone 206-544-5000, extension 1; fax 206-766-5680; Internet <https://www.myboeingfleet.com>. You may view this referenced service information at the FAA, 1601 Lind Avenue SW., Renton, WA. For information on the availability of this material at the FAA, call 425-227-1221.

Issued in Renton, Washington, on May 5, 2016.

Michael Kaszycki,
Acting Manager,
Transport Airplane Directorate,
Aircraft Certification Service.

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